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Photo: Heading out to work on a rapid assessment of Ethiopia's meningitis surveillance system are (left to right) Ethiopia Field Epidemiology and Laboratory Training Program Resident Abochet, Jessica MacNeil, EISO Anna Acosta, EISO Hajime Kamiya, and Israel Tareke from WHO-Ethiopia.

DBD's Work Eliminating Epidemic Meningitis Continues: Staff Activities in Ethiopia

By December 2012, over 100 million people living in 9 countries had been vaccinated against meningitis with MenAfriVac®, the novel serogroup A meningococcal conjugate vaccine. This affordable, 40 cents a dose vaccine, holds great promise to end epidemic meningitis as a public health concern in sub-Saharan Africa. MenAfriVac® is being introduced in a two-pronged strategy across the meningitis belt of sub-Saharan Africa, which stretches from Senegal to Ethiopia: first, preventive mass-vaccination campaigns in the age groups at highest risk (ages 1–29 years) to induce herd immunity in the population and reduce transmission, and then integration of the vaccine into routine childhood vaccination programs. It is planned that all 26 countries in the meningitis belt will have introduced MenAfriVac® by 2016.

CDC's work in meningitis prevention spans several decades, and staff from the Meningitis and Vaccine Preventable Diseases Branch (MVPDB) continue to routinely travel to sub-Saharan Africa to work with the World Health Organization (WHO) and local health authorities to strengthen epidemiologic and laboratory capacity in order to provide high quality surveillance data for bacterial meningitis. To measure the impact of MenAfriVac® and demonstrate vaccine effectiveness, strong surveillance with timely laboratory confirmation of the pathogens causing meningitis is critical.

MVPDB staff are now ramping up to support Ethiopia during the country's first mass vaccination campaigns with MenAfriVac® in the last quarter of 2013. A phased approach of vaccine introduction is planned, with the entire country being vaccinated over three years. Staff are collaborating with WHO, the Norwegian Institute of Public Health, and the Ethiopian Health & Nutrition Research Institute to improve meningitis surveillance prior to Ethiopia's MenAfriVac® introduction.

MVPDB's Amanda Cohn and Jessica MacNeil attended the "Meningococcal Vaccines for Africa" project kick-off meeting in Addis Ababa in January 2013. Then between February 25 and March 8, 2013, a rapid assessment of the meningitis surveillance system was carried out by Jessica MacNeil, Epidemic Intelligence Service Officers (EISO) Anna Acosta and Hajime Kamiya, and country partners. This assessment will aid in staff understanding of the current surveillance system for meningitis and inform subsequent surveillance strengthening activities in Ethiopia.

Prior to MenAfriVac® implementation in Ethiopia, MVPDB epidemiology and laboratory staff plan to conduct several workshops and trainings. A surveillance workshop and laboratory assessments are planned for June, followed by a data management and real-time PCR training this fall.

DIRECTOR'S SPOTLIGHT

regards from *Rana..*

Dear Colleagues,

Over the last few months, I had the chance to participate in various meetings and site visits where DBD's work received significant recognition for its high scientific quality and important public health impact. Our recent work has guided vaccine policy in the U.S. for pertussis and pneumococcal disease, for Hib vaccine worldwide, pneumococcal and pertussis vaccines in the Americas, and meningococcal vaccine in Africa. DBD has also continued to support building laboratory capacity worldwide for vaccine-preventable bacterial diseases, in collaboration with WHO. Our staff have investigated multiple outbreaks, some that were politically quite complex, like the Legionnaires' disease outbreak in Pittsburgh, requiring not only strong technical skills, but also great communication skills!

We continue to do all this in spite of a restrained fiscal environment, using all we got, whether it is traditional African carvings or innovative electronic platforms such as apps, and being conscious of environmental and energy needs! As the weather in Atlanta is finally warming up and spring is here, I hope this will bring even more "positive energy" to our division, and I welcome our new staff, including our four new EIS officers who will join us in July. I thank you all for the ongoing great work, and I have special thanks and best wishes for our employees who have either retired or are moving on to new careers.

Rana

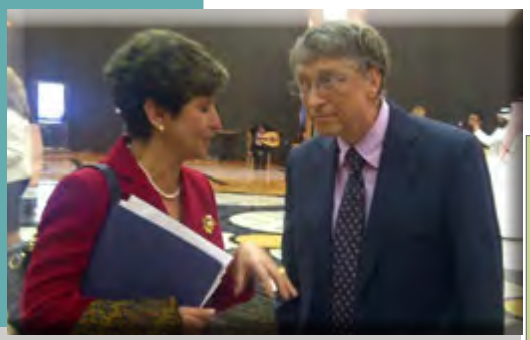
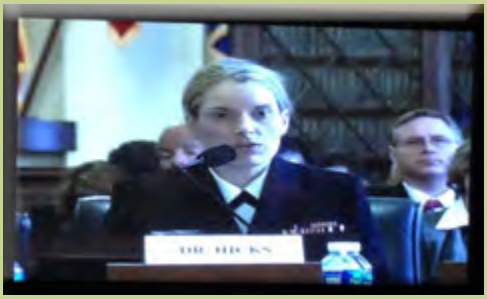


Photo: Bill Gates and Rana Hajjeh talk at the Global Vaccine Summit in Abu Dhabi, UAE on April 24, 2013. The summit was co-hosted by the Crown Prince of Abu Dhabi and Bill Gates, in partnership with United Nations Secretary-General Ban Ki-moon and the Bill & Melinda Gates Foundation, to continue the momentum of the Decade of Vaccines, a vision and commitment from global partners to reach all children with the vaccines they need. More: http://new.livestream.com/gatesfoundation/globalvaccinesummit

Legionnaires' Disease Goes to Washington

A hearing was held by the House Committee on Veterans' Affairs on February 5, 2013, in Washington, DC. Lauri Hicks (RDB, below) testified on behalf of NCIRD in the hearing titled "Analyzing VA's actions to prevent Legionnaires' disease in Pittsburgh."



Preventing GBS through Electronic Platforms

Despite more than a decade of prevention efforts, group B *Streptococcus* (GBS) remains the leading cause of early-onset neonatal sepsis in the US. The most recent Guidelines for Prevention of Perinatal GBS Disease were published in 2010 and were endorsed by the American College of Obstetricians and Gynecologists, American Academy of Pediatrics, American College of Nurse-Midwives, American Academy of Family Physicians, and American Society for Microbiology. The cornerstones of GBS prevention are prenatal screening of all pregnant women for GBS colonization, giving appropriate intrapartum antibiotic prophylaxis (IAP) to GBS-colonized women and to those with specific risk-factors, and appropriately managing neonates at high risk for early onset group B streptococcal (EOGBS) disease.

Implementation assessments of the GBS guidelines have found several areas where implementation is less than ideal, including suboptimal antibiotic choices for IAP for penicillin-allergic women and suboptimal implementation of IAP for women in preterm labor. Few evaluations have focused on implementation of the GBS guidelines for neonatal care. However, a public health evaluation project on hospital policies related to the evaluation and management of neonates at risk for EOGBS disease recently undertaken by the Respiratory Diseases Branch (RDB) showed that more than half of the hospitals surveyed had policies that were not consistent with CDC GBS guidelines.

Photo: NCIRD OD's Maureen Marshall and DBD's Alison Patti and Jonathan Wortham presented a poster about the GBS app's development at the 2012 National Conference on Health Communication, Marketing, and Media.

While the GBS guidelines — as well as complementary algorithms, slide sets, and frequently asked questions — are available on the website www.cdc.gov/groupbstrep, providers need to determine which algorithm(s) are relevant for a patient, obtain the necessary information, and then proceed through 36 pages of text and 8 tables and figures to obtain the correct clinical management for prevention of EOGBS disease. To improve implementation of the 2010 GBS guidelines, RDB, with programming and strategic support from NCIRD's web team, has developed a smartphone application called "Prevent GBS" that gives obstetric and neonatal providers specific, evidence-based management recommendations after responding to on-screen prompts for the relevant clinical information. EISO Jonathan Wortham explains that, "This project aims to provide clinicians with customized, evidence-based management recommendations for each patient at the bedside, simplifying guideline implementation and ultimately preventing cases of GBS disease."

The app will be available both on the CDC mobile website (optimized for smartphones and PDAs), and as a CDC stand-alone native application that can be run directly from an iPad, iPhone, or Android device without an internet connection. The app is in its final stages of development and is expected to go live during summer 2013.

While "Prevent GBS" will be available on multiple platforms, we are unlikely to reach providers who are not actively searching for information on the GBS guidelines. Integration of the GBS guidelines into electronic health records (EHR) would allow use of patient clinical information to prompt clinicians to implement recommendations at the point of care while simultaneously reaching all providers using the EHR. Ideally, EHR integration will involve key clinical data elements triggering the "Prevent GBS" app, which would analyze the data received and send back the appropriate guidance to the provider within the EHR system. The EHR system would then display those recommendations to the user for seamless implementation of the guidance in real time. Development of EHR integration is currently underway with piloting set to occur at a hospital system in Pennsylvania by the end of 2013.

LAPP Chile Efforts

The Latin American Pertussis Project (LAPP), a collaboration between the Sabin Vaccine Institute, the Pan American Health Organization (PAHO), MVPDB, and the Latin American Ministries of Health, works to strengthen pertussis surveillance and more accurately describe the epidemiology and burden of disease in Latin America. The project's specific objectives are to develop standards and practices for pertussis surveillance and strengthen laboratory capacity to detect *Bordetella pertussis* in participating countries. In-country assessment of the pertussis surveillance system and laboratory capacity, in-country laboratory diagnostic training (PCR, culture, and serology), implementation of a laboratory quality control and quality assurance program, and ongoing technical assistance are among the activities being undertaken to accomplish LAPP's objectives.

Since 2009, Argentina, Mexico, Panama, and Colombia have participated in LAPP. Chile is the most recent country to join LAPP. Lucia Tondella and Brunie Burgos from MVPDB's Pertussis Laboratory and Matt Griffith from the branch's epidemiology team conducted an assessment of Chile's pertussis surveillance system and pertussis laboratory capacity between January 28 and February 7, 2013. The team met with national, regional, and local officials and visited health centers, hospitals, and laboratories in 3 provinces, including Santiago. A follow-up trip to provide laboratory diagnostic training took place in April.

Photo: PAHO, CDC, Chilean National Institute for Public Health, and Chile's Ministry of Health officials discuss pertussis surveillance strategies at the Ministry of Health. MVPDB's Matt Griffith (second from left) and Lucia Tondella (third from right) participated in this meeting.

Global Lab Forum

The First Global Health Laboratory Forum was held February 25, 2013, in CDC's Tom Harkin Global Communication Center. The well-attended daylong event was a rare opportunity for laboratory scientists and others from across CDC to come together and share and discuss their activities around the world. Scientists from across DBD highlighted many of their accomplishments in poster presentations, and attended sessions and round-table discussions about a broad range of topics related to global health. Volunteers represented DBD by staffing a booth for NCIRD and discussing our many ongoing global laboratory projects, collaborations, and capacity-building efforts with others interested in global work.

Photo: Lesley McGee (RDB), Brunilis Burgos-Rivera (RDB), Stephanie Schwartz (OD), and Rana Hajjeh (OD) stand with the poster DBD presented at the Global Health Laboratory Forum, which highlights many of DBD's global laboratory-related activities.

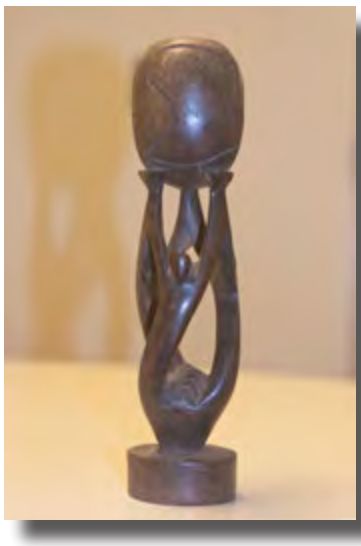
Global Day at Division of Global HIV/AIDS Annual Meeting

Rana Hajjeh co-chaired, with Mary Kay Larson from the Division of Global HIV/AIDS (DGHA), the "Global Day" at the annual CDC DGHA meeting held March 11–15, 2013. Global Day highlighted the large scope of international public health activities being undertaken by CDC staff agency wide and brought together participants from CDC country offices, CDC staff in headquarters, and many national and international partners. Rana Hajjeh and Cynthia Whitney (RDB) participated in a breakout session on immunizations focused on efforts to accelerate new vaccine introduction and evaluation of their impact in developing countries.

Global Action Plan for Pneumonia and Diarrhoea

On April 12, 2013, the integrated Global Action Plan for Pneumonia and Diarrhoea (GAPPD) was launched. This document, spearheaded by WHO and UNICEF, with support from CDC, recognizes that prevention and control of pneumonia and diarrhea cannot be adequately dealt with separately but only through integrated programs. Without these coordinated efforts, more than 2 million children will die from these two diseases each year around the world. These diseases must be addressed to make progress towards the Millennium Development Goal to save the lives of children under the age of 5. Learn more about GAPPD at http://www.defeatdd.org/global-action-plan.

Lab, Epi, and Data Management…So Happy Together



In October 2012, Ryan Novak (MVPDB) and Gerald Jones (OSELS/EAPO) traveled to Ghana to conduct a week-long data management course that was followed by a course conducted by Meningitis Lab staff (Jenny Vuong, Leonard Mayer, and Brian Harcourt) on PCR and other lab techniques, emphasizing real-time PCR.

During these trainings, epidemiology, laboratory, and data management were highlighted as the 3 components of a good surveillance system; if one is missing or there is bad communication between any of the components, then surveillance system problems are likely.

After the course, Leonard visited the Ghanaian Cultural Center that features local crafts and artwork. He was attracted to the carving pictured here that the artist said was based on the Ghanaian folklore of people holding up the world. When Leonard showed the statue to the students, one student said, "It's lab, epi, and data management holding up the world." "That's our take home message," commented Leonard.

IDSA Pertussis Meeting

The IDSA Working Group Meeting on Pertussis was held March 6, 2013, in Washington, DC. CDC collaborated with the Infectious Diseases Society of America, National Foundation for Infectious Diseases, Pediatric Infectious Diseases Society, and HHS' National Vaccine Program Office to hold this one-day meeting on pertussis to better define the problem and explore possible short- and long-term solutions. Thomas Clark (MVPDB) presented "Epidemiology of pertussis." Nancy Messonnier (MVPDB) moderated "Group discussion: possible interim solutions." Conrad Quinn (MVPDB), Lucia Pawloski (MVPDB), and Stephen Hadler (OD) also participated.

Global Reference Lab Site Visits

DBD hosts the Global Reference Laboratory (GRL) for the WHO Invasive Bacterial, Vaccine-Preventable Diseases (IB VPD) Laboratory Surveillance Network in each of the 6 WHO regions. DBD staff conducted lab assessments and trainings that help staff from these labs build in-country capacity for detection and characterization of agents of IB VPD and support a regional approach to laboratory networking.

DBD laboratory scientists provided mentorship and support during several site visits and refresher trainings for The Medical Research Council in The Gambia that serves as a Regional Reference Laboratory (RRL) for IB VPD for the African Region. Ongoing collaboration between the GRL-RRL is strengthening surveillance by emphasizing quality assurance in implementation of laboratory protocols.

Photo: Carla Talarico (RDB) works at the bench processing cerebrospinal fluid specimens from children with suspect meningitis alongside Sheikh Jarju, from the Medical Research Council in The Gambia, which serves as the RRL for West Africa.

MPIR Lab Goes Green

The results of the first agency-wide competition geared to help laboratories improve their cold storage practices could save CDC $127,000 a year and aid the agency in its compliance with the presidential mandate that sets sustainability goals for federal agencies and focuses on making improvements in their environmental, energy, and economic performance.

The 2012 Freezer Challenge sought to find ways to reduce energy use, cut operating costs, adopt innovative laboratory sustainability practices, and leverage existing storage capacity in CDC laboratories without the need for new equipment or space. All the competing teams fulfilled the requirements but only one took the coveted Freezer Challenge Champions title and ice scraper — DBD's Hanan Dababneh and Conrad Quinn of MVPDB's Microbial Pathogenesis and Immune Response (MPIR) Laboratory took home the title and prize for their work. Conrad and Hanan inventoried 28 units, temperature tuned 28 units, shared 2 units with another lab, emptied and retired 7 units, and cleaned and defrosted 56 units. Not only will the MPIR lab save money through this initiative, but they will also decrease carbon emissions equivalent to taking approximately 108 cars off the road. The MPIR lab now also enjoys the benefits of enhanced operational efficiency.

Photo: Hanan Dababneh and Conrad Quinn of MVPDB's MPIR Lab won the coveted Freezer Challenge Champions title and ice scraper for 2012.

Fifth PAHO Regional Pneumococcal Symposium

The Fifth Regional Pneumococcal Symposium was held March 5-6, 2013, in San Paulo, Brazil. Jennifer Loo (RDB) presented "Pneumococcal herd immunity in the US – impact of routine use of PCV in children." Tamara Pilishvilli (RDB) presented "Current recommendations for pneumococcal vaccines in immunocompromised adults."

Vaccine News

PCV13 Licensed and Recommended for Older Children at High Risk for Pneumococcal Disease

FDA licensed the 13-valent pneumococcal conjugate vaccine (PCV13) for use in children 6 through 17 years of age in January 2013. At its February 2013 meeting, the Advisory Committee on Immunization Practices (ACIP) voted to recommend routine use of a single dose of PCV13 for children 6 through 18 years of age who have an immunocompromising condition and have not previously received the vaccine. Those conditions include anatomic or functional asplenia (including sickle cell disease), HIV infection, chronic renal failure and nephrotic syndrome, cochlear implants or cerebrospinal fluid leaks, diseases associated with immunosuppressive drug treatment, and congenital immunodeficiency. Prior to this licensure, ACIP had said PCV13 may be used off-label for high-risk children in those age groups.

Hib Statement and Hib-MenCY VFC

At its February 2013 meeting, ACIP voted to reaffirm the 1993 recommendations for use of *Haemophilus influenzae* type b (Hib) conjugate vaccines. Also at this meeting, ACIP voted to include all available Hib-containing vaccines, including Hib-MenCY, in the Vaccines for Children (VFC) program.

Tdap During Every Pregnancy Recommendation Published

On February 22, 2013, updated recommendations for use of Tdap in pregnant women were published in MMWR. The new guidance recommends administering Tdap during every pregnancy, preferably during weeks 27 through 36. This replaces the original recommendation that pregnant women get the vaccine only if they had not previously received it.

SAGE Recommends 3 Options for Hib Vaccine Schedule

Rana Hajjeh (OD) presented to the WHO Strategic Advisory Group of Experts (SAGE) at their recent meeting in April, which resulted in an update to the previous Hib vaccine recommendation. SAGE is now recommending any of the following schedules may be used: 3 primary doses without a booster, 2 primary doses plus a booster, or 3 primary doses with a booster.

Epi-Aids and Investigations

Group A *Streptococcus* outbreak – Chinle, Arizona, August 2012–March 2013. The team went to assist the Navajo Epidemiology Center with identifying and characterizing infected persons with invasive disease, and determining appropriate control and prevention measures.

Meningitis outbreak – Southern Nations Nationalities and Peoples Region, Ethiopia, March 2013. A microbiologist from the Meningitis Laboratory went to Ethiopia to provide technical assistance with real-time PCR testing to the Ethiopian Health and Nutrition Research Unit.

Legionnaires' disease outbreak, May 2013 – Mazatlán, Mexico. A team went to provide technical assistance to the Mexican Ministry of Health, the Federal Commission for the Protection against Sanitary Risk, and Sinaloa Health Department to plan for a complete epidemiologic and environmental investigation of a resort, as well as conduct the investigation in conjunction with state and local health authorities.

Photo: EISO Aaron Harris (3rd from left) with staff from Arizona's Hózhóogo Hooghan Public Health Division.

Communications

World Meningitis Day was observed on April 24, 2013. The day is organized by the Confederation of Meningitis Organizations (CoMO), which has organization and individual members in 25 countries across the Americas, Asia Pacific and Europe/Africa. Through this annual observance, CoMO encourages everyone to learn the signs and symptoms of meningitis, the importance of urgent treatment of the disease, and that prevention is available through vaccination against some forms of meningitis, as well as to get involved in local events. You can still log onto CoMO's website (www.comoonline.org) to join hands against meningitis in a global virtual community. As part of World Meningitis Day, MVPDB's Fabien Diomandé and Ryan Novak authored a blog: http://blogs.cdc.gov/global/category/meningitis/.

World Immunization Week, which began on April 20, 2013, promoted one of the world's most powerful tools for health – the use of vaccines to protect, or "immunize," people of all ages against disease. Under the global slogan "Protect your world – get vaccinated," WHO encouraged individuals and organizations working at international, regional, national, and community levels, in the public and private sectors, to coordinate and engage in activities during World Immunization Week.

New Websites: New, user-friendly websites are now available for legionellosis (Legionniares' disease and Pontiac fever), tetanus, and diphtheria. They provide a comprehensive experience for those seeking information about these diseases. You can view the new websites at www.cdc.gov/legionella, www.cdc.gov/tetanus, and www.cdc.gov/diphtheria.

CDC and Medscape Videos: This special series of commentaries is part of a collaboration between CDC and Medscape and is designed to deliver CDC's authoritative guidance directly to Medscape's physicians, nurses, pharmacists, and other healthcare professionals. In this series, experts from CDC deliver video commentaries on current topics important to practicing clinicians. NCIRD has contributed to a variety of commentaries, including a recently released commentary titled, "Protecting Patients from Deadly Pertussis: Updated Vaccine Guidelines," featuring Tami Skoff (MVPDB). Find all of CDC's commentaries at www.medscape.com/cdc-commentary.

Pertussis (Whooping Cough) Infographic: Pregnant women are now recommended a Tdap shot during every pregnancy to protect them from pertussis and pass some protection to their newborns. CDC's new infographic was developed to educate the public on the 3 best ways to protect babies from whooping cough. You can find the infographic at www.cdc.gov/pertussis.

Photo: Susan Ingram, from WA's Snohomish Health District, featured the new pertussis infographic during National Infant Immunization Week in April.

ProVac International Initiative

Rana Hajjeh (OD) participated in a visit to Azerbaijan as part of the ProVac International Initiative, a collaboration with Agence de Médecine Préventive (AMP), based in Paris, France. ProVac was first initiated in the Pan American Health Organization region, and aims to strengthen national capacity for evidence-based decisions regarding new vaccine introduction in low- and middle-income countries, using tools for economic analysis and providing training to national, multidisciplinary teams. Azerbaijan is planning to introduce pneumococcal conjugate vaccine in July 2013, with support from the GAVI Alliance, and is interested in implementing ProVac to look at vaccine cost-effectiveness and support the immunization program in the long term.

Photo: Rana Hajjeh (OD) with AMP staff visiting the Azerbaijan MOH bacteriology laboratory, which serves as a national reference laboratory for invasive bacterial disease surveillance, during the ProVac mission in March.

Featured Publications

Cohn AC, MacNeil JR, Clark TA, et al. **Prevention and control of meningococcal disease: recommendations of the Advisory Committee on Immunization Practices (ACIP).** MMWR Morb Mortal Wkly Rep. 2013;62(RR02):1-22.

Feikin D, Njenga K, Bigogo G, et al. **Viral and bacterial causes of severe acute respiratory illness among children aged less than 5 years in a high malaria prevalence area of western Kenya, 2007-2010.** Pediatr Infect Dis J. 2013;32:e14-9.

Fleming-Dutra KE, Taylor T, Link-Gelles R, et al. **Effect of the 2009 influenza A(H1N1) pandemic on invasive pneumococcal pneumonia.** J Infect Dis. 2013;207:1135-43.

Hicks LA, Taylor TH, Hunkler RJ. **U.S. outpatient antibiotic prescribing, 2010.** N Eng J Med. 2013;368:1461-2.

Queenan AM, Cassiday P, Evangelista A. ***Bordetella pertussis* variants lacking the vaccine antigen pertactin: first detection in the United States.** New Eng J Med. 2013;368:583-4.

Tartof SY, Lewis M, Kenyon C, et al. **Waning immunity to pertussis following 5 doses of DTaP.** Pediatrics. 2013;131:1047-52.

Tatti KM, Martin SW, Boney KO, et al. **Qualitative assessment of pertussis diagnostics in United States laboratories.** Pediatr Infect Dis J. 2013 Apr 12. [Epub ahead of print]

Wang SA, Mantel CF, Gacic-Dobo M, et al. **Progress in introduction of pneumococcal conjugate vaccine – worldwide, 2000-2012.** MMWR Morb Mortal Wkly Rep. 2013;62(16):308-11.

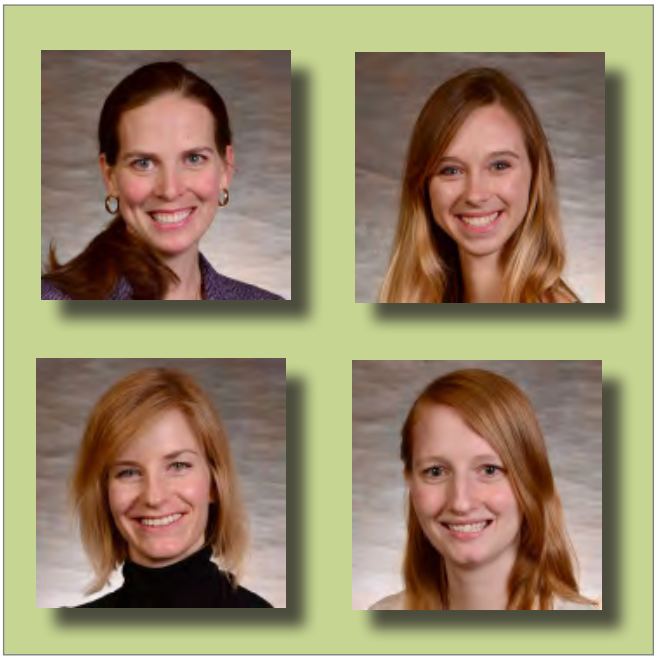
Williams WW, Lu PJ, Greby S, et al. **Non-influenza vaccination coverage among adults – United States, 2011.** MMWR Morb Mortal Wkly Rep. 2013;62:66-72.

Wu HM, Soraia CM, Harcourt BH, et al. **Accuracy of real-time PCR, gram stain and culture for *Streptococcus pneumoniae*, *Neisseria meningitidis* and *Haemophilus influenzae* meningitis diagnosis.** BMC Infect Dis. 2013;13:26.

Tatti KM, Loparev VN, Ganakammal SR, et al. **Draft genome sequences of *Bordetella holmesii* strains from blood (F627) and nasopharynx (H558).** Genome Announc. 2013;1:e0005613.

DBD Welcomes 4 New EIS Officers

During the annual Epidemic Intelligence Service (EIS) Conference in April 2013, DBD recruited 4 new EIS officers to join the division for a 2-year assignment starting this summer. Please welcome Louise Francois and Sara Tomczyk to RDB, and Lucy Breakwell and Lucy McNamara to MVPDB (left to right, top to bottom in photos).



DBD Joins the BrunchRUN

The 1st Atlanta BrunchRUN 5K was held in Piedmont Park on May 11, 2013. The race benefited Open Hand, an organization seeking to eliminate disability and untimely death due to nutrition-sensitive chronic disease. Photo: Lauri Hicks and her husband (Mike) and son (Eliot), Alison Patti, Sema Mandal, Lara Misegades, Hajime Kamiya, Anna Acosta, Sarah Meyer, Stacey Martin and her husband (Ted, not pictured), and Ryan Novak.